REMARKS

Examiner, in the Official Action dated May 7, 2004 rejected claims 1-8 under 35 U.S.C. 102(b) as being anticipated by Moriue et al (U.S. 5,357,525). Regarding claims 1 and 7, Examiner found that Moriue teaches a device for transferring information that comprises a plurality of multiplex nodes that each have their own address. In addition, Examiner found that Moriue discloses that each node comprises of a central processing unit (CPU) that is coupled to the receiver, transmitter, and input/output member. Moreover, Moriue teaches that if an error occurs, the acknowledgement signal is not transmitted; but retransmits the signal. Furthermore, Moriue teaches that when the cyclic redundant code from the node does not coincide, the sub-node does not return an acknowledgement signal, but transmits the frame.

Regarding claim 2, Examiner found that Moriue discloses the CPU as comprising a memory (transmission buffer memory) wherein the message data is stored then transmitted to the multiplex bus at a predetermined time to prevent collision from occurring.

Regarding claims 3 and 4, Examiner stated that Moriue discloses a device wherein the CPU is programmed such that data can be transmitted between the input/output members can be carried out between the nodes. Furthermore, Moriue discloses a confirmation signal being the ACK (acknowledgement) signal that is returned from each of the receiving nodes when data is properly received.

Regarding claim 5, Examiner stated that Moriue discloses a data-generating device that is connected to the input/output member and the CPU wherein the data-generating means that generates a cyclic redundancy code (CRC) for error detection

within the data that is transmitted between the main node and sub-nodes. Also, Moriue teaches that the data is compared, and if the data coincides, the sub-node will transmit an ACK signal.

Regarding claim 6, Examiner found that Moriue discloses a data-processing device (port control section 23 and Fig. 8) that is coupled to the input/output ports 21 and 22, respectively. In addition, Moriue discloses the data-processing device 23 as being able to monitor for flags within the communication control section 26. In the event of a flag, the data processing unit 23 is able to transfer data that is either stored in the reception buffer and the transmission buffer.

Regarding claim 8, the Examiner stated that Moriue discloses that the input/output members can be connected to various devices; in turn, the device may be a computer.

Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over Moriue in view of Kamanaka (U.S. 4,454,862). Examiner found that Moriue did not expressly disclose the system applicable to glass horticulture but when the teachings of Kamanaka are reviewed, an obvious rejection was appropriate.

Formal matters objected to by the Examiner included: lack of an Abstract on a separate sheet; the arrangement of the Specification and lack of headings; and the lack of a drawing to facilitate understanding of the invention.

In response to the formal matters, applicant includes in this response an Abstract on a separate sheet, and a drawing. The drawing, it is submitted, introduces no new matter. A substitute Specification has also been submitted accompanied by a marked-up version showing the changes. It was the intention in submitting the substitute

Specification that proper headings be included and references to the claims be avoided. Applicant submits that the substitute Specification introduces no new matter.

With respect to the rejection of claims 1 through 9 based on Moriue, applicant submits the following. An important or key aspect to the present invention is that it relates to a radiographic network. Of course, this feature means that the node elements forming the network communicate radiographically (wirelessly) and not, as is more common, through wire connections. This difference between applicant's invention and Moriue is an essential difference, as the network in the Moriue patent is wired. There is no teaching in Moriue regarding a wireless network. In a wired network like that taught by Moriue, it is substantially a certainty that data transmitted by an element of the network will arrive at the addressed element over the wires provided. As a consequence of the layout of the network, it is known how the data will travel along the wires and along each of the network elements connected to the wires. In the radiographic network as claimed by applicant, no such certainty exists. Circumstances such as atmospheric condition, temporary presence of large objects in the network area (such as a vehicle), or other factors rule out this certainty. Due to the features of the claims presented, however, the data travels efficiently from an originating node to the addressed node. The path that this transmission takes, and which nodes will be used or passed by the data, is entirely dependent on the circumstances. This is a key functional difference between Moriue and the present invention. The distinction is further specified in the main claim in that the main claim calls for each node element having a radio receiver and radio transmitter. These elements are lacking in Moriue and it would not be obvious from Moriue to use these elements to provide a radiographic

network. In Moriue's network a clearly defined path of travel exists. It is not obvious to one skilled in the art, given the disclosed clearly defined paths of travel, how to provide a system, as applicant does, in which the data travels more or less randomly.

In light of the above, appellant submits that Moriue neither anticipates nor renders obvious the claims as presented. Reconsideration of the rejections of the claims is requested and allowance of claims 1-9 at an early date is solicited.

Respectfully submitted,

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Marked Up Version of Substitute Specification

TITLE OF THE INVENTION

RADIOGRAPHIC NETWORK

BACKGROUND OF THE INVENTION

(1) Field of the Invention.

The invention relates to a device for transferring information which comprises a number of node elements. Such a device can be designated a network.

Each of the node elements has its own address so that information intended for that node element and information originating from that node element can be identified as being associated with that node element.

(2) Description of Related Arts Including Information Disclosed Under 37 CFR 1.97 and 1.98.

Networks, particularly those used for transferring digital information between computers, are generally known. These typically comprise direct line connections and/or switched line connections over which the information is transferred. The information is sent along the line connections in accordance with a specified protocol so that each of the node elements can make use of the information.

The laying of line connections is generally quite a costly business, particularly when these line connections have to be arranged between separate buildings. The line connections must then generally be buried in the ground.

BRIEF SUMMARY OF THE INVENTION

This drawback, mentioned above, is obviated in the device according to the invention ~~as characterized in claim 1~~. This network according to the invention operates

radiographically so that physical connections between the node elements are not necessary. A data signal is transferred from the one node element to another until the node element is reached for which the data signal is intended.

A further favourable development is characterized in ~~claim 2~~the present invention. This development prevents a data signal from creating repetitive feedback in the device, whereby proper operation and rapid data transfer could be adversely affected. The data signal will spread through the network like the rings resulting from a stone in water and be "quenched" at the edges of the network.

The device can be embodied such that a data signal is transmitted a number of times at intervals in order to ensure that it arrives at the intended destination. ~~The measure of claim 4 is preferably applied herein.~~ As soon as the node element from which the data signal originally comes receives the confirmation signal, repeated transmission of the original data signal can be stopped.

The original data signal sent by a node element is generated in ~~the~~ an embodiment according to ~~claim 5~~the present invention by a data-generating device connected to the input/output member. The data-generating device thus provides the data which must be transferred to another location in the network. Using the radio transmitter the central processor unit then sends the data which is packaged in a particular protocol.

A node element can also comprise a data-processing device and data supplied via the network is then further processed by this data-processing unit.

~~The measure of claim 7 is preferably applied.~~ The signal ~~is hereby~~can also be prevented from being able to run on, for instance as a consequence of a malfunction of one of the radio receivers.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Figure 1 is a schematic illustration of a radiographic network in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The device according to the invention can be applied for mutual connection of a number of computers marked C in Figure 1. A number of node elements N can herein be applied which are used solely to pass on the data signal from devices D from one computer to another, particularly when the distance between the computers for mutual connection is greater than the range of any of the radio transmitters.

The radio receivers and radio transmitter suitably operate at a frequency and with a power such that no authorization is required therefor. A suitable frequency is therefore 433 mHz.

Instead of mutually connecting a number of computers, the network according to the invention can also be used in suitable manner to control the systems present in the vicinity from a central point at which a computer is arranged. These can be for instance indicator and alarm systems in factories and for instance homes for the elderly and nursing homes and culture systems in agriculture and horticulture.

Another suitable application is the control of systems in buildings, such as heating installations, lighting and the like. The device is applied particularly usefully

here when these buildings are separate buildings such as for instance in bungalow parks. In this respect an application in glass horticulture can also be envisaged.

Another suitable application is as theft alarm system, wherein a number of individual objects have to be monitored. Yachts in a marina, transport containers at a storage depot and the like can be envisaged here. Each of the objects for monitoring, such as the yachts or the containers, is provided with a node element according to the invention, on the input/output member of which one or more alarm sensors are connected. The device can be embodied herein such that each of the node elements is periodically checked for proper operation in order to enable timely recognition of sabotage.

In systems wherein the device is used to control or monitor a number of separate buildings and/or objects, the central computer can also be used in mobile manner. As long as it is situated within the range of the radio transmitter of one or more of the node elements, data signals intended for this central computer and originating from this central computer will be processed correctly in the network. In the stated application for bungalow parks, the device can for instance be applied to monitor and control the installations in each of the bungalows. It is thus possible to monitor the proper operation of the central heating devices in each of the bungalows, but also to remotely switch them on and off and adjust the thermostat thereof. When the bungalow is not occupied, the thermostat can for instance be set remotely to a position at which freezing of pipes is prevented. It is also possible to set the thermostat to a comfortable value some time before the arrival of new guests, so that they arrive to find a pleasantly heated bungalow.

Mains power failure can for instance be detected in similar manner. Only one node element need generally be applied per bungalow. All desired information signals and controls can be performed via this node element.

The bungalows in a bungalow park are usually spaced such that it is possible to suffice with one node element per bungalow to ensure a good transmission through the network. In the case of greater distances additional node elements can be incorporated.

Another example of the present invention is the application in climate control in glass horticulture.

Within glass horticulture a system can be developed wherein, on the basis of diverse sensors (about 50 per hectare) in the glasshouse, a picture can be formed of the climatological situation in this glasshouse, such as determining the temperature, relative humidity, CO_2 and so on.

For a uniform growth of the crop it is particularly important to provide a very uniform climate through the glasshouse.

According to the invention the differences can be detected and corrected with a network of sensors over the whole area of the glasshouse. Sunblinds, heating equipment and sprinkler installations are for instance actuated subject to the detected differences.

The pattern of sensors can be sub-divided into sub-patterns which each co-act with a node element in accordance with the network system of the invention. It is further possible to group the sensors of the same type, for instance temperature,

humidity and CO_2 sensors, which groups report to predetermined node elements, which data is transferred to the relevant computer.

The system according to the invention can be extended still further by applying remote mobile control elements or hand terminals which are carried by security or glasshouse personnel, which personnel can immediately report information relating to humidity or plant diseases. In this latter case the member of staff does not need to know his location in the glasshouse at that moment. The position determination can in any case take place with for instance the bar codes on the plants in order to obtain a more precise determination. A less precise position determination takes place as "cross-check", i.e. use is made of the high-frequency signal intensity generated by the hand terminal. This operates as follows:

When the signal from the hand terminal is received by a plurality of node elements, it is possible on the basis of the signal intensity to roughly determine the location at which the hand terminal is situated. The disease symptoms and the associated position determination reported by the hand terminal herein serve as reference data, for instance for a spraying machine for pesticides.

Other functions can be given to the hand terminals, for instance a timestamp, so that the activities performed by staff can be registered.

The manner in which the different sensors and control elements are connected to the input/output member of the node element and co-act therewith will be obvious to a skilled person in the field and requires no further explanation here.